

IN THE SPECIFICATION

Please add the following paragraphs starting at page 4, line 13 of the specification.

In example embodiments, said image processing device is provided, in the later stage when the robot arm is close to attach the teat cup to the teat of the milking animal, to repeatedly determine the relative position of the teat of the milking animal in a coordinate system of the camera pair; and to repeatedly detect the robot arm or the teat cup and determine its relative position in the coordinate system of the first camera pair by said stereoscopic calculation method based on said repeatedly recorded pairs of images.

In example embodiments, wherein camera pair is provided to record a pair of images, wherein several well defined points are located in the common field of vision of the camera pair, the positions of the well defined points being known in the coordinate system of the milking system; and said image processing device is provided to perform an absolute calibration process, in which the positions of the image planes of the cameras of the camera pair are determined in the coordinate system of the milking system to thereby be capable of determining the absolute position of the teat of the milking animal.

In example embodiments, said camera pair is provided to record a pair of images, wherein several well defined points are located in the common field of vision of the camera pair; and said image processing device is provided to perform a relative calibration process, in which the positions of the image planes of the cameras of the camera pair are determined relative to each other to thereby be capable of determining the position of the teat of the milking animal relative to another measured position.

In example embodiments, a method for determining positions of the teats of a milking animal in a milking system comprises a robot arm for automatically attaching teat cups to the

teats of a milking animal when being located in a position to be milked, and a control device for controlling the movement of said robot arm based on determined positions of the teats of the milking animal, said method being characterized by the steps of: directing a first camera pair towards the teats of the milking animal when being located in the position to be milked;
- repeatedly recording pairs of images by the first camera pair; repeatedly detecting the teats of the milking animal and determining their positions by a stereoscopic calculation method based on said repeatedly recorded pairs of images, wherein the absolute position of a teat of the milking animal is initially determined in a coordinate system of the milking system; and the position of the teat of the milking animal is determined relative to the robot arm or the teat cup repeatedly in a later stage when the robot arm is close to attach a teat cup to the teat of the milking animal, the position of the teat of the milking animal relative to the robot arm or the teat cup being more exact than said absolute position.

In example embodiments, an arrangement for determining positions of the teats of a milking animal in a milking system comprises a robot arm for automatically attaching teat cups to the teats of a milking animal when being located in a position to be milked, and a control device for controlling the movement of said robot arm based on determined positions of the teats of the milking animal, said arrangement comprising: a camera pair directed towards the teats of the milking animal when being located in the position to be milked, wherein the camera pair is provided to repeatedly record pairs of images; an image processing device provided for repeatedly detecting the teats of the milking animal and determining their positions by a stereoscopic calculation method based on said repeatedly recorded pairs of images, wherein said camera pair is comprised of a pair of thermal or infrared cameras, each responsive to infrared radiation propagating towards the camera.

In example embodiments, a method for determining positions of the teats of a milking animal in a milking system comprises a robot arm for automatically attaching teat cups to the teats of a milking animal when being located in a position to be milked, and a control device for controlling the movement of said robot arm based on determined positions of the teats of the milking animal, said method being characterized by the steps of: directing a camera pair towards the teats of the milking animal when being located in the position to be milked;
- repeatedly recording pairs of images by the camera pair; and repeatedly detecting the teats of the milking animal and determining their positions by a stereoscopic calculation method based on said repeatedly recorded pairs of images, wherein said camera pair is comprised of a pair of thermal or infrared cameras, each responsive to temperatures in the field of vision of the camera; and said repeatedly recorded pairs of images are thermal images.

In example embodiments, an arrangement for determining positions of the teats of a milking animal in a milking system comprises a robot arm for automatically attaching teat cups to the teats of a milking animal when being located in a position to be milked, and a control device for controlling the movement of said robot arm based on determined positions of the teats of the milking animal, said arrangement comprising: a first camera pair directed towards the teats of the milking animal when being located in the position to be milked, wherein the first camera pair is provided to repeatedly record pairs of images; an image processing device provided for repeatedly detecting the teats of the milking animal and determining their positions by a stereoscopic calculation method based on said repeatedly recorded pairs of images, wherein said first camera pair is mounted below the teats of, and behind, the milking animal when being located in the position to be milked so that said first

camera pair is directed diagonally upwards towards the teats of the milking animal when being located in the position to be milked.

In example embodiments, the cameras of said first camera pair are movable relative to the milking system and to the milking animal when being located in a position to be milked, and optionally relative to each other, in order to be capable of reducing the number of failed teat position determinations due to teats being obscured, while pairs of images are recorded, by means of finding positions for said cameras where no teats are obscured.

In example embodiments, the cameras further comprise a third camera mounted adjacent said first camera pair mounted below the teats of, and behind, the milking animal, and directed towards the teats of the milking animal when being located in the position to be milked, for repeatedly record images simultaneously with the recording of said pairs of images, wherein said image processing device is provided for repeatedly detecting the teats of the milking animal and determining their positions by a stereoscopic calculation method based on one of said repeatedly recorded pairs of images and said repeatedly recorded images by said third camera.

In example embodiments, said image processing device is provided for repeatedly detecting the teats of the milking animal and determining their positions by a stereoscopic calculation method based on another one of said repeatedly recorded pairs of images and said repeatedly recorded images by said third camera.

In example embodiments, the arrangement further comprises a second camera pair directed towards the teats of the milking animal when being located in the position to be milked, wherein the second camera pair is provided to repeatedly record pairs of images, wherein said image processing device is provided for repeatedly detecting the teats of the

milking animal and determining their positions by a stereoscopic calculation method based on said pairs of images repeatedly recorded by said second camera pair.

In example embodiments, said second camera pair is mounted below the milking animal, particularly in the floor of the milking system, when being located in the position to be milked.

In example embodiments, wherein said second camera pair is mounted at the side of the milking animal when being located in the position to be milked.

In example embodiments, said second camera pair is mounted at a height so that the teats of the milking animal belong to the outer contour of the milking animal in the repeatedly recorded pairs of images.

In example embodiments, said second camera pair is movable vertically in order to be positioned at a height so that the teats of the milking animal belong to the outer contour of the milking animal in the repeatedly recorded pairs of images.

In example embodiments, said image processing device is provided in an initial stage to determine the absolute position of a teat of the milking animal in a coordinate system of the milking system; and said image processing device is provided, in a later stage when the robot arm is close to attach a teat cup to the teat of the milking animal, to repeatedly determine the position of the teat of the milking animal relative to the robot arm or the teat cup, wherein the position of the teat of the milking animal relative to the robot arm or the teat cup is more exact than said absolute position.

In example embodiments, said image processing device is provided, in the later stage when the robot arm is close to attach the teat cup to the teat of the milking animal, to repeatedly determine the relative position of the teat of the milking animal in a coordinate

system of the camera pair; and to repeatedly detect the robot arm or the teat cup and determine its relative position in the coordinate system of the first camera pair by said stereoscopic calculation method based on said repeatedly recorded pairs of images.

In example embodiments, said camera pair is provided to record a pair of images, wherein several well defined points are located in the common field of vision of the camera pair, the positions of the well defined points being known in the coordinate system of the milking system; and said image processing device is provided to perform an absolute calibration process, in which the positions of the image planes of the cameras of the camera pair are determined in the coordinate system of the milking system to thereby be capable of determining the absolute position of the teat of the milking animal.

In example embodiments, said camera pair is provided to record a pair of images, wherein several well defined points are located in the common field of vision of the camera pair; and said image processing device is provided to perform a relative calibration process, in which the positions of the image planes of the cameras of the camera pair are determined relative to each other to thereby be capable of determining the position of the teat of the milking animal relative to another measured position.

In example embodiments, a method for determining positions of the teats of a milking animal in a milking system comprises a robot arm for automatically attaching teat cups to the teats of a milking animal when being located in a position to be milked, and a control device for controlling the movement of said robot arm based on determined positions of the teats of the milking animal, said method being characterized by the steps of: directing a first camera pair towards the teats of the milking animal when being located in the position to be milked;

- repeatedly recording pairs of images by the first camera pair; repeatedly detecting the teats of the milking animal and determining their positions by a stereoscopic calculation method based on said repeatedly recorded pairs of images, wherein said first camera pair is arranged below the teats of, and behind, the milking animal when being located in the position to be milked; and is directed diagonally upwards towards the teats of the milking animal when being located in the position to be milked.

In example embodiments, an arrangement for determining positions of the teats of a milking animal in a milking system comprising a robot arm for automatically attaching teat cups to the teats of a milking animal when being located in a position to be milked, and a control device for controlling the movement of said robot arm based on determined positions of the teats of the milking animal, said arrangement comprising: a first camera pair directed towards the teats of the milking animal when being located in the position to be milked, wherein the first camera pair is provided to repeatedly record pairs of images; an image processing device provided for repeatedly detecting the teats of the milking animal and determining their positions by a stereoscopic calculation method based on said repeatedly recorded pairs of images, wherein the cameras of said first camera pair are arranged vertically one above the other; and said image processing device is provided, for each teat and for each pair of images, to define the position of the lower tip of the teat contour in the pair of images as conjugate points for said stereoscopic calculation, and to find said conjugate points along a substantially vertical epipolar line.

In example embodiments, said image processing device is provided, for each teat and for each pair of images, to compensate for any deviations caused by the fact that the lower tip of the teak contour in the pair of images corresponds to different objection points on the teat

due to different perspective views, in which the pair of images are recorded, by means of creating a mathematical model of the characteristic form of the teat, and to calculate the compensation based on the mathematical -model, the different perspectives, and the distance to the teat.

In example embodiments, said image processing device is provided to determine the positions of the teats of the milking animal, and to calculate the compensation for any deviations caused by the fact that the lower tip of the teat contour in the pair of images corresponds to different objection points on the teat, in an iterative process.

In example embodiments, said first camera pair is mounted below the teats of, and behind, the milking animal when being located in the position to be milked so that said first camera pair is directed diagonally upwards towards the teats of the milking animal when being located in the position to be milked.

In example embodiments, the cameras of said first camera pair are movable relative to the milking system and to the milking animal when being located in a position to be milked, and optionally relative to each other, in order to be capable of reducing the number of failed teat position determinations due to teats being obscured, while pairs of images are recorded, by means of finding positions for said cameras where no teats are obscured.

In example embodiments, the arrangement further comprises a third camera mounted adjacent said first camera pair, and directed towards the teats of the milking animal when being located in the position to be milked, for repeatedly record images simultaneously with the recording of said pairs of images, wherein said image processing device is provided for repeatedly detecting the teats of the milking animal and determining their positions by a

stereoscopic calculation method based on one of said repeatedly recorded pairs of images and said repeatedly recorded images by said third camera.

In example embodiments, said image processing device is provided for repeatedly detecting the teats of the milking animal and determining their positions by a stereoscopic calculation method based on another one of said repeatedly recorded pairs of images and said repeatedly recorded images by said third camera.

In example embodiments, the arrangement further comprises a second camera pair directed towards the teats of the milking animal when being located in the position to be milked, wherein the second camera pair is provided to repeatedly record pairs of images, and said image processing device is provided for repeatedly detecting the teats of the milking animal and determining their positions by a stereoscopic calculation method based on said pairs of images repeatedly recorded by said second camera pair.

In example embodiments, said second camera pair is mounted below the milking animal, particularly in the floor of the milking system, when being located in the position to be milked.

In example embodiments, said second camera pair is mounted at the side of the milking animal when being located in the position to be milked.

In example embodiments, said second camera pair is mounted at a height so that the teats of the milking animal belong to the outer contour of the milking animal in the repeatedly recorded pairs of images.

In example embodiments, said second camera pair is movable vertically in order to be positioned at a height so that the teats of the milking animal belong to the outer contour of the milking animal in the repeatedly recorded pairs of images.

In example embodiments, the arrangement further comprises at least one light source provided for illuminating the udder of the milking animal to thereby increase the contrast in the repeatedly recorded pairs of images.

In example embodiments, said light source emits white light.

In example embodiments, said light source emits UV light.

In example embodiments, said light source creates a back lighting for said first camera pair.

In example embodiments, said light source is movable and/or capable of being directed toward different directions.

In example embodiments, the image planes of the cameras of said first camera pair are coplanar.

In example embodiments, said image processing device is provided, for each time the teats are to be detected, to apply a motion detection algorithm to reduce the area in which the teats likely are, wherein the difference between two images recorded one after the other by one camera of said camera pair is analyzed, and the area in which the teats likely are is reduced by discarding areas in the two images wherein substantially no movement has occurred.

In example embodiments, said image processing device is provided to reduce scatter in the reduced area in which the teats likely are by applying a relaxation algorithm.

In example embodiments, said image processing device is provided to enlarge the reduced area in which the teats likely are by a pixel expanding algorithm.

In example embodiments, said camera pair is directed towards the teats of the milking animal when being located in the position to be milked is directed so that the teats of the

milking animal belong to the outer contour of the milking animal in the repeatedly recorded pairs of images; and said image processing device is provided to further reduce the area in which the teats likely are by a contour creation algorithm.

In example embodiments, said image processing device is provided, for each time the teats are to be detected, to apply an edge detection algorithm based on the phase congruency model of feature detection to thereby find edges and corners in a recorded pair of images that most likely include those of the teats of the milking animal.

In example embodiments, said image processing device is provided, for each time the teats are to be detected, to apply a Canny detection algorithm to thereby find edges in a recorded pair of images that most likely include those of the teats of the milking animal.

In example embodiments, said image processing device is provided, for each time the teats are to be detected, to apply a labeling algorithm for calculating features of the found edges and corners in the recorded pair of images.

In example embodiments, said image processing device is provided, for each time the teats are to be detected, to apply a hierarchical chamfer matching algorithm for identifying edges and corners of the found edges and corners in the recorded pair of images which belong to the teats of the milking animal based on said calculated features.

In example embodiments, said image processing device is provided in an initial stage to determine the absolute position of a teat of the milking animal in a coordinate system of the milking system; and said image processing device is provided, in a later stage when the robot arm is close to attach a teat cup to the teat of the milking animal, to repeatedly determine the position of the teat of the milking animal relative to the robot arm or the teat

cup, wherein the position of the teat of the milking animal relative to the robot arm or the teat cup is more exact than said absolute position.

In example embodiments, said image processing device is provided to automatically detect the condition of the teats, particularly if they are swell up or if injuries and/or dirt subsist on the teats of the milking animal by an image processing method based on said repeatedly recorded pairs of images.

In example embodiments, said injuries are any of wounds, cuts, sores, or red spots.

In example embodiments, said milking system comprises at least one -teat cleaning device capable of cleaning teats of milking animals according to anyone of a plurality of different teat cleaning schemes, said arrangement comprising means provided to select one of said plurality of different teat cleaning schemes for the cleaning of the teats of said milking animal based on said automatic detection of the condition of the teats of said milking animal.

In example embodiments, said image processing device is provided to automatically detect dirt or damages on the lenses of said camera pair by an image processing method based on repeatedly recorded pairs of images.

In example embodiments, said image processing device is provided, for each one of the cameras of said camera pair, to automatically detect dirt or damages on the lens of that camera by an image processing method based on comparisons of repeatedly recorded images by that camera.

In example embodiments, the cameras of said camera pair are rotatable to be capable of being directed towards each other; and said image processing device is provided, for each one of the cameras of said camera pair, to automatically detect dirt or damages on the lens of

that camera by an image processing method based on repeatedly recorded images by the other camera.

In example embodiments, a method for determining positions of the teats of a milking animal in a milking system comprises a robot arm for automatically attaching teat cups to the teats of a milking animal when being located in a position to be milked, and a control device for controlling the movement of said robot arm based on determined positions of the teats of the milking animal, said method being characterized by the steps of: directing a first camera pair towards the teats of the milking animal when being located in the position to be milked; - repeatedly recording pairs of images by the first camera pair; repeatedly detecting the teats of the milking animal and determining their positions by a stereoscopic calculation method based on said repeatedly recorded pairs of images, wherein the position of the lower tip of the teat contour in each pair of images is defined as conjugate points for said stereoscopic calculation; and the cameras of said first camera pair are arranged vertically one above the other, wherein the conjugate points are found, for each teat and for each pair of images, along a substantially vertical epipolar line.

In example embodiments, an arrangement for determining positions of the teats of a milking animal in a milking system comprises a robot arm for automatically attaching teat cups to the teats of a milking animal when being located in a position to be milked, and a control device for, controlling the movement of said robot arm based on determined positions of the teats of the milking animal, said arrangement comprising: a first camera pair directed towards the teats of the milking animal when being located in the position to be milked, wherein the first camera pair is provided to repeatedly record pairs of images; and an image

processing device provided for repeatedly detecting the teats of the milking animal and determining their positions by a stereoscopic calculation method based on said repeatedly recorded pairs of images, wherein said image processing device is provided, for each time the teats are to be detected, to apply a motion detection algorithm to reduce the area in which the teats likely are, wherein the difference between two images recorded one after the other by one camera of said first camera pair is analyzed, and the area in which the teats likely are, is reduced by discarding areas in the two images wherein substantially no movement has occurred.

In example embodiments, said image processing device is provided to reduce scatter in the reduced area in which the teats likely are by applying a relaxation algorithm.

In example embodiments, said image processing device is provided to enlarge the reduced area in which the teats likely are by a pixel expanding algorithm.

In example embodiments, said first camera pair is directed towards the teats of the milking animal when being located in the position to be milked is directed so that the teats of the milking animal belong to the outer contour of the milking animal in the repeatedly recorded pairs of images; and said image processing device is provided to further reduce the area in which the teats likely are by a contour creation algorithm.

In example embodiments, said image processing device is provided, for each time the teats are to be detected, to apply an edge detection algorithm based on the phase congruency model of feature detection to thereby find edges and corners in a recorded pair of images that most likely include those of the teats of the milking animal.

In example embodiments, said image processing device is provided, for each time the teats are to be detected, to apply a Canny detection algorithm to thereby find edges in a recorded pair of images that most likely include those of the teats of the milking animal.

In example embodiments, said image processing device is provided, for each time the teats are to be detected, to apply a labeling algorithm for calculating features of the found edges and corners in the recorded pair of images.

In example embodiments, said image processing device is provided, for each time the teats are to be detected, to apply a hierarchical chamfer matching algorithm for identifying edges and corners of the found edges and corners in the recorded pair of images which belong to the teats of the milking animal based on said calculated features.

In example embodiments, a method for determining positions of the teats of a milking animal in a milking system comprises a robot arm for automatically attaching teat cups to the teats of a milking animal when being located in a position to be milked, and a control device for controlling the movement of said robot arm based on determined positions of the teats of the milking animal, said method being characterized by the steps of: directing a first camera pair towards the teats of the milking animal when being located in the position to be milked;
- repeatedly recording pairs of images by the first camera pair; repeatedly detecting the teats of the milking animal and determining their positions by a stereoscopic calculation method based on said repeatedly recorded pairs of images, wherein a motion detection algorithm is applied each time the teats are to be detected to reduce the area in which the teats likely are, in which the difference between two images recorded one after the other by one camera of said first camera pair is analyzed, and the area in which the teats likely are, is reduced by discarding areas in the two images wherein substantially no movement has occurred.

In example embodiments, an arrangement for determining positions of the teats of a milking animal in a milking system comprises a robot arm for automatically attaching teat cups to the teats of a milking animal when being located in a position to be milked, and a control device for controlling the movement of said robot arm based on determined positions of the teats of the milking animal, said arrangement comprising: a first camera pair directed towards the teats of the milking animal when being located in the position to be milked, wherein the first camera pair is provided to repeatedly record pairs of images; an image processing device provided for repeatedly detecting the teats of the milking animal and determining their positions by a stereoscopic calculation method based on said repeatedly recorded pairs of images, wherein said image processing device is provided, for each time the teats are to be detected, to apply an edge detection algorithm based on the phase congruency model of feature detection to thereby find edges and corners in a recorded pair of images that most likely include those of the teats of the milking animal.

In example embodiments, said image processing device is provided, for each time the teats are to be detected, to apply a Canny detection algorithm to thereby find edges in a recorded pair of images that most likely include those of the teats of the milking animal.

In example embodiments, said image processing device is provided, for each time the teats are to be detected, to apply a labeling algorithm for calculating features of the found edges and corners in the recorded pair of images.

In example embodiments, said image processing device is provided, for each time the teats are to be detected, to apply a hierarchical chamfer matching algorithm for identifying edges and corners of the found edges and corners in the recorded pair of images which belong to the teats of the milking animal based on said calculated features.

In example embodiments, a method for determining positions of the teats of a milking animal in a milking system comprises a robot arm for automatically attaching teat cups to the teats of a milking animal when being located in a position to be milked, and a control device for controlling the movement of said robot arm based on determined positions of the teats of the milking animal, said method being characterized by the steps of: directing a first camera pair towards the teats of the milking animal when being located in the position to be milked;
- repeatedly recording pairs of images by the first camera pair; repeatedly detecting the teats of the milking animal and determining their positions by a stereoscopic calculation method based on said repeatedly recorded pairs of images, wherein an edge detection algorithm based on the phase congruency model of feature detection is applied each time the teats are to be detected to thereby find edges and corners in a recorded pair of images that most likely include those of the teats of the milking animal.

In example embodiments, an arrangement for determining positions of the teats of a milking animal in a milking system comprises a robot arm for automatically attaching teat cups to the teats of a milking animal when being located in a position to be milked, and a control device for controlling the movement of said robot arm based on determined positions of the teats of the milking animal, said arrangement comprising: a first camera pair directed towards the teats of the milking animal when being located in the position to be milked, wherein the first camera pair is provided to repeatedly record pairs of images; an image processing device provided for repeatedly detecting the teats of the milking animal and determining their positions by a stereoscopic calculation method based on said repeatedly

recorded pairs of images, wherein said image processing device is provided to automatically detect a condition of the teats of the milking animal by an image processing method based on said repeatedly recorded pairs of images.

In example embodiments, said image processing device is provided to automatically detect injuries and/or dirt on the teats of the milking animal by an image processing method based on said repeatedly recorded pairs of images.

In example embodiments, said injuries are any of wounds, cuts, sores, or red spots.

In example embodiments, said image processing device is provided to automatically detect if a teat of the milking animal is swell up by an image processing method based on said repeatedly recorded pairs of images.

In example embodiments, said milking system comprises at least one teat cleaning device capable of cleaning teats of milking animals according to anyone of a plurality of different teat cleaning schemes, said arrangement comprising means provided to select one of said plurality of different teat cleaning schemes for the cleaning of the teats of said milking animal based on said automatic detection of the condition of the teats of said milking animal.

In example embodiments, said image processing device is provided to automatically detect dirt or damages on the lenses of said first camera pair by an image processing method based on repeatedly recorded pairs of images by said first camera pair.

In example embodiments, said image processing device is provided, for each one of the cameras of said first camera pair, to automatically detect dirt or damages on the lens of that camera by an image processing method based on comparisons of repeatedly recorded images by that camera.

In example embodiments, the cameras of said first camera pair are rotatable to be capable of being directed towards each other; and said image processing device is provided, for each one of the cameras of said first camera pair, to automatically detect dirt or damages on the lens of that camera by an image processing method based on repeatedly recorded images by the other camera.

In example embodiments, a method for determining positions of the teats of a milking animal in a milking system comprises a robot arm for automatically attaching teat cups to the teats of a milking animal when being located in a to be milked, and a control device for controlling the movement of said robot arm based on determined positions of the teats of the milking animal, said method being characterized by the steps of: directing a first camera pair towards the teats of the milking animal when being located in the position to be milked;
- repeatedly recording pairs of images by the first camera pair; repeatedly detecting the teats of the milking animal and determining their positions by a stereoscopic calculation method based on said repeatedly recorded pairs of images, wherein injuries and/or dirt on the teats of the milking animal are automatically detected by an image processing method based on said repeatedly recorded pairs of images.

In example embodiments, an arrangement for determining positions of the teats of a milking animal in a milking system comprises a robot arm for automatically attaching teat cups to the teats of a milking animal when being located in a position to be milked, and a control device for controlling the movement of said robot arm based on determined positions of the teats of the milking animal, said arrangement comprising: a first camera pair directed towards the teats of the milking animal when being located in the position to be milked, wherein the first camera pair is provided to repeatedly record pairs of images; an image

processing device provided for repeatedly detecting the teats of the milking animal and determining their positions by a stereoscopic calculation method based on said repeatedly recorded pairs of images, wherein said image processing device is provided to automatically detect dirt or damages on the lenses of said first camera pair by an image processing method based on repeatedly recorded pairs of images by said first camera pair.

In example embodiments, said image processing device is provided, for each one of the cameras of said first camera pair, to automatically detect dirt or damages on the lens of that camera by an image processing method based on comparisons of repeatedly recorded images by that camera.

In example embodiments, the cameras of said first camera pair are rotatable to be capable of being directed towards each other; and said image processing device is provided, for each one of the cameras of said first camera pair, to automatically detect dirt or damages on the lens of that camera by an image processing method based on repeatedly recorded images by the other camera.

In example embodiments, a method for determining positions of the teats of a milking animal in a milking system comprises a robot arm for automatically attaching teat cups to the teats of a milking animal when being located in a position to be milked, and a control device for controlling the movement of said robot arm based on determined positions of the teats of the milking animal, said method being characterized by the steps of: directing a first camera pair towards the teats of the milking animal when being located in the position to be milked; repeatedly recording pairs of images by the first camera pair; repeatedly detecting the teats of the milking animal and determining their positions by a stereoscopic calculation method based on said repeatedly recorded pairs of images, wherein dirt or damages on the lenses of

said first camera pair is/are automatically detected by an image processing method based on repeatedly recorded pairs of images by said first camera pair.